Fiberoptic Sensor Experience in Oregon

Tim H. Thex, P.E.

Oregon Department of Transportation

Transportation Systems Monitoring Unit

Oregon is testing several strategies for traffic monitoring

- Fiberoptics
- Video
- Microloops, Piezo

Partially funded by Safety Grant

- Approved grant in September 1999
- Grant was intended to fund new technology to improve safety
- Project was sited in Oregon Safety Corridor
- Vendor was selected from Research project

Fiberoptics sensors are on line

- Installation completed on July 31, 2000
- Secondary checking equipment also on line
- Testing and Evaluation presently being done
- Full Implementation Expected by October 1, 2000

Status of Installation

- Utilities in place by June 25, 2000
- Optical Sensor Systems, Incorporated of Melbourne, Florida testing equipment
- Optical Sensor Systems installed sensors on July 31, 2000
- Data Collection taking place August 1, 2000

Vendor Information

- Project Leader: Dr. Barry Grossman
- Cost of Equipment:

Fiberoptic Sensors (4)	$1,425
4 input interface box	$ 700
Installation sealant	$ 220
Installation & testing	$2,180
Cabinet	$1,250
Saw Cut, Flagging	$2,300
Hook up power, seal fiber	$ 700
Total Cost	$8,775


STOP


TRAFFIC
SIGNAL


ADR-1000
PEEK


STOP

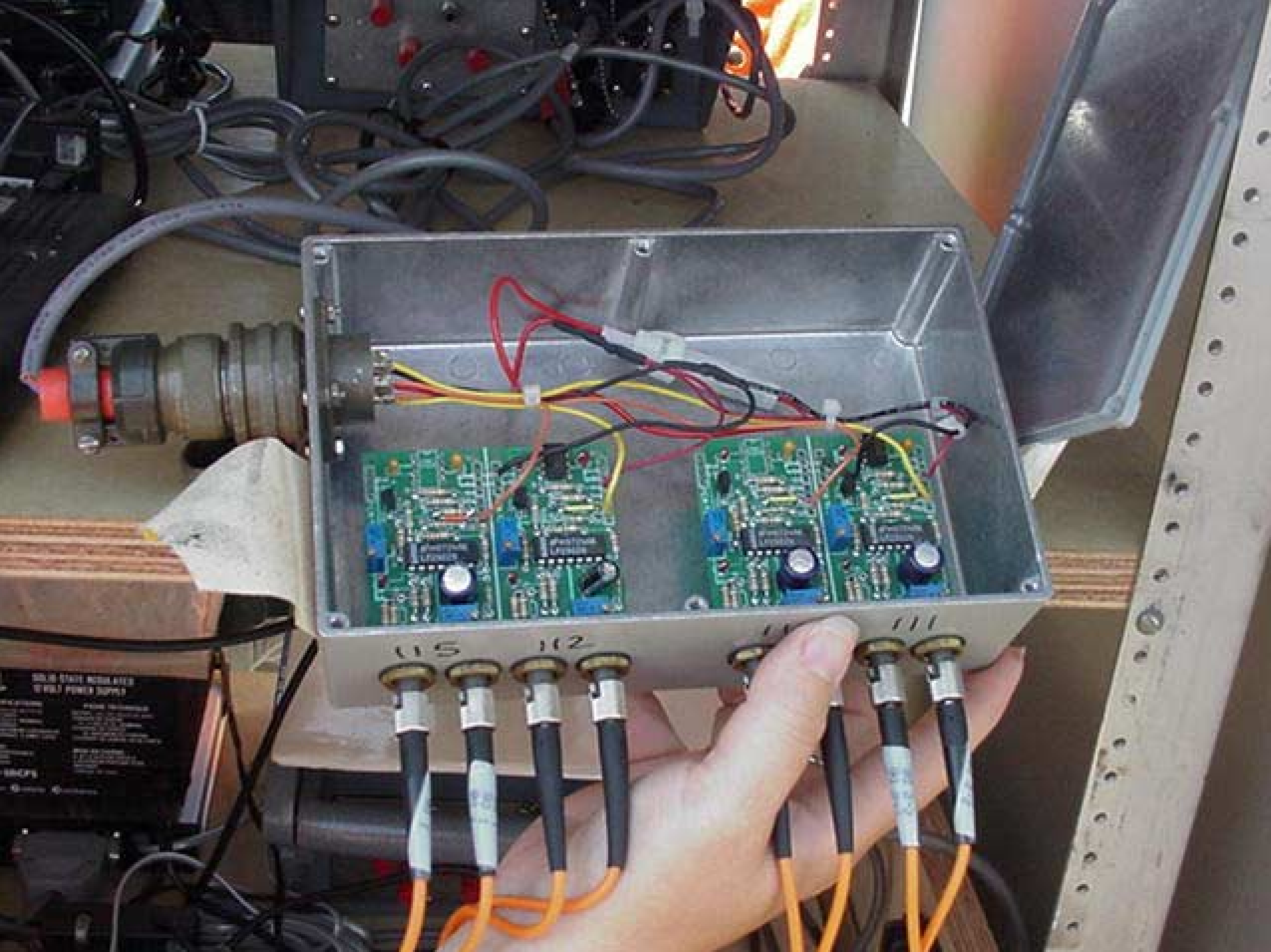

DUCT
SEAL


SOLID STATE REGULATED
12 VOLT POWER SUPPLY
SPECIFICATIONS
115
112


DUCT
SEAL


LOOPS
LOOPS


LOOPS
LOOPS

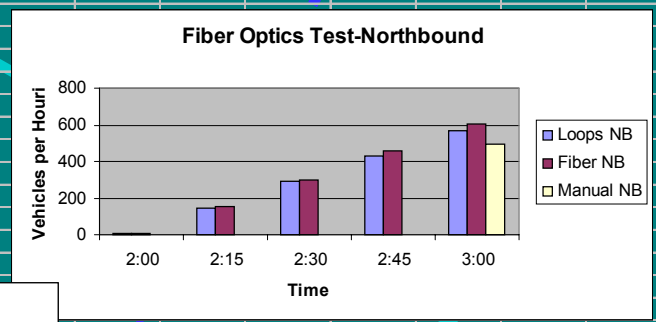


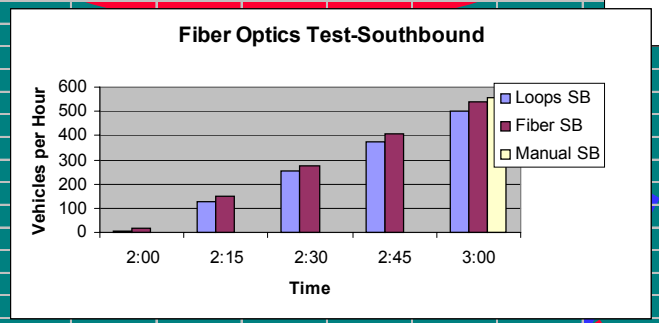
Key Findings

- Accuracy still questionable according to first tests
- Depth of 3/16” subject to pavement wear and studded snow tires
- Oregon can see possibilities for better machine classification
- Fiberoptics can be adapted to existing equipment

•Preliminary Testing

	2:00	2:15	2:30	2:45	3:00
Loops NB	8	149	288	430	568
Fiber NB	10	155	300	457	603
Manual NB					497
	2:00	2:15	2:30	2:45	3:00
Loops SB	6	128	254	377	499
Fiber SB	14	148	276	408	542
Manual SB					558





Next Steps

- Adjust existing loops for ATR Classification
- Set up fiber for classification
- Perform 24-hour manual count
- Examine current research problem findings
- Determine if fiberoptics works as well in PCC Concrete
- Oregon will be happy to share actual test results with other DOTs and organizations

Performance Update

- On August 21, 2000 the fiber quit transmitting data
- A field check determined that top coat epoxy was breaking up
- Staples on fiber optics were showing
- We are working with the vendor for a solution--our initial guess is too much hardener in the epoxy

•Lessons Learned

- Stress traffic control--don't assume flagging companies know the guidelines
- Have a detailed saw cut plan beforehand
- Test fiberoptics cable before installation
- Have warranty agreement with vendor
- Don't volunteer for presentation when you barely have installation done